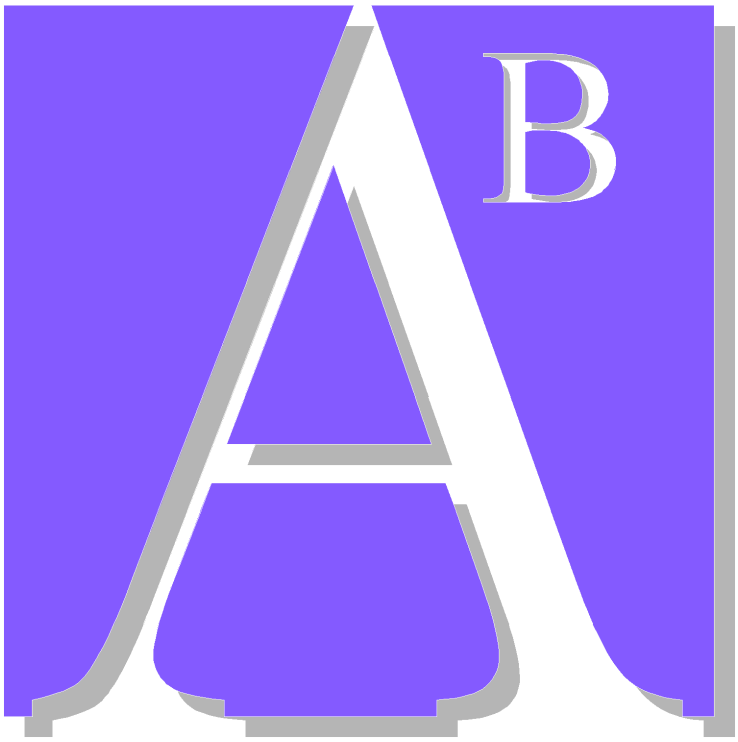

Appendix B

Appendix B

Planning for Administrative Work Environments

As stated in AR 405–70, *Utilization of Real Property*, "The goal of space utilization planning and management is to maximize the efficient use of all Army lands, facilities, and space assigned to support missions." Satisfying this goal in the planning of administrative work environments requires an examination of both the organization's requirements and the criteria governing space utilization.

The first step in the planning process is to ascertain the raw data defining the physical extent of the area. Personnel count, equipment requirements, and growth projections must be determined in order to define the scope of the project. Understanding the culture of the organization and the mode in which it operates is necessary to provide effective space planning and design. The organizational elements are analyzed within the context of the larger office environment and parameters imposed by existing conditions. Once the global aspects of the environment have been established, the detailed design of workstations and their components can be accomplished. Documentation of construction elements via plan drawings and specifications follows. Furniture elements are documented in detailed layout plans of componentry, power, data, and communications systems. Although professional support is available, facility users have many responsibilities related to procurement, installation, and moving personnel into the new work environment.

Data Collection and Programming

The discovery of quantitative information which characterizes an organization—area, power, cooling requirements and the like—is accomplished by conducting an inventory of office, storage, specialized spaces, and the equipment required by the individuals and units that make up the functional groups. Potential for change in size over a set period of time (typically two to five years), whether positive or negative, should also

The process of programming seeks to produce quantitative documentation of the spatial needs of an agency, unit, or department by examining the quantitative content of a given environment: its people and equipment.

be analyzed as part of this inventory. Project goals and objectives will determine the extent of the effort.

Accurate unit information is critical to effective programming and is typically collected by means of questionnaires, and interviews with key personnel within individual units. The persons to be interviewed should be determined by the client Point of Contact (PoC) and should understand the project goals and objectives.

The PoC must understand the programming procedures in order to facilitate the process. Interviews must be obtained from personnel familiar with all aspects of the unit being programmed to guarantee the reliability of the information.

Use DoD Forms 1450 and 1450-1, Space Requirements Data Forms, to ensure that the program meets current allowable government space standards. These forms are used for space allocation review by both DoD and GSA. Their use during programming is recommended, as these forms may be required for approval by the installation commander.

A brief explanation of the process and goals for programming should be laid out for those involved before the process is begun.

A schedule of interviews should be set up with all PoC's. Conduct interviews at the site rather than a remote location. A week or two before the interview a questionnaire should be prepared and sent to interviewees. The interviewees should be the designated PoC for the units. The questionnaire should request a detailed inventory of existing space usage for the unit and should be structured to simplify transfer of data to the final format.

Information requested should include the following at a minimum.

- Organizational Structure:
  - departmental mission,
  - organization chart, and
  - relationship to other departments.
- Functional Structure:
  - functions performed,
  - operating schedule,
  - historical and projected staffing, and
  - equipment requirements.

- Assessment of Current Facilities:
  - quantity of space,
  - internal arrangement,
  - accessibility,
  - quality of environment,
  - known code or regulatory deficiencies, and
  - known problem areas.
- Anticipated Changes in Work Methodology.
- Additional Comments.

Analysis

Responses given on the questionnaires should be reviewed during the interview to ensure completeness and accuracy. Typically the interview includes a walking tour of the unit with the interviewee. This gives the interior designer the opportunity to *visually* confirm the data given on the questionnaires.

AR 405-70, *Utilization of Real Property*, "Appendix D", defines requirements for office space and supporting areas. The regulation controls both net and gross area in terms of the following categories. **Office space** is workstation area and associated immediate circulation. Office space is evaluated based on personnel. **Storage space**, as used in this regulation, is space which supports workstations as common areas. It includes such things as common storage, files, and equipment within the office environment. Its size is determined by equipment. **Special space** is space with architectural features significantly different from the office environment. It normally includes conference rooms, computer rooms, classrooms, exhibit and reception areas, cafeteria or break rooms, duplicating rooms, mail rooms, and building maintenance support areas such as warehousing and loading docks. Special space must be justified on the basis of specific mission and site support requirements. Allocations include an allowance for internal circulation. Consult the regulation for specific requirements.

Care should be taken to assign programmed space to the appropriate category, as such assignment may affect the total allowable area. Storage area requirements must be

clearly distinguished from office space, as the two functions are generated differently (personnel vs. equipment), but are found closely integrated within the unit environment.

The numerical data collected during the interviews should be summarized and sent back to the interviewees for verification prior to final summarization and initiation of design. After verification, summaries should be prepared—including growth projections, if this is a consideration. Comments by interviewees should be analyzed and incorporated into the documentation when appropriate.

Once the data on personnel numbers and equipment has been collected, it is extrapolated into volumetric data. This provides the estimated footprint area of the new space to be included in the planning of the facility. Army Regulation 405-70, *Utilization of Real Property*, "Appendix D" provides numerical planning and utilization allowances which should be applied to the quantities determined during the interview process.

After the initial determination of volumetric data using AR 405-70, *Utilization of Real Property*, allowances has been performed, these numbers must be checked. One way to do this is by applying a scaling factor (to account for changes in need, or future growth) to the existing area. If the change from existing to projected requirements is dramatic, it may be necessary to examine both sets of calculations more closely in order to determine which more accurately reflects the needs of the organization. If the organization is a new one, the best check is to reference a similar facility, and apply a scaling factor to account for differences in population, equipment etc. Discrepancies should be resolved at this point before effort is expended in the planning and design process.

General building circulation and support are factored in at 25 percent of the calculated net planned area. The actual percentage may vary depending on several things, primarily the building configuration and the total required area. Circulation percentage for a small organization is typically higher than that for a large one due to the exaggerated ratio of circulation between groups compared to that within. Building configuration

affects plan area directly, as some buildings are more efficient to plan than others. Simple things, such as the distance between mullions on a window wall, will affect the layout of offices, and thereby their size, and ultimately the efficiency of a floor plan. Finally, the limitations of the infrastructure of the building must be considered—allowable loads on structure within storage areas, availability of adequate ventilation for special needs, etc. These factors may affect the area requirements for a given function, if the limits of the building do not meet the standard programmatic guidelines.

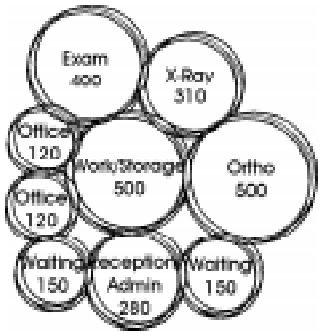

Fig. 1 Bubble Diagram

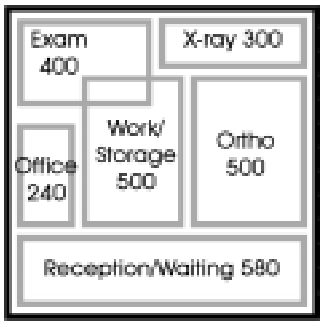

Fig. 2 Blocking Diagram

Space Planning

The area requirements determined through the programming and data development process are used to establish the area requirement for an organization. The areas determined for a collection of organizations which will share a common space are typically arranged as a bubble diagram (Fig. 1). These diagrams indicate the relation of groups to one another. They do not represent a space plan or floor plan, but the relationship of organizations to one another.

A further extension of the initial diagram is a preliminary **blocking diagram** in which the bubble diagram is made more regular and checked for fit inside the proposed floor plan (Fig. 2). The location of various organizations on the floor plan at this time is solely a function of the adjacency requirements brought to light during the interview portion of the programming process. It is the designer's task to arrange these groups in such a way as to maximize the required adjacencies. If the project includes planning for a multi-floor facility the data should be interpreted into blocking and **stacking diagrams** which show the organization being studied and three dimensional adjacencies, where each unit is represented by a volume of space as quantified by the program data.

Once the area requirements of an organization have been assessed through programming, and the relative position has been determined through the review of blocking and stacking diagrams, the actual configuration of the group is developed through the planning of the proximity and

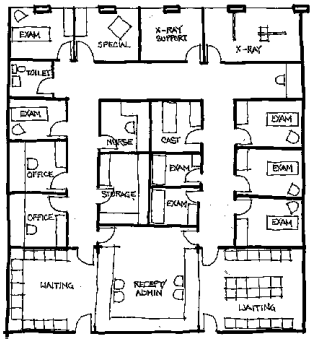

Fig. 3 Final Plan

area requirements within the organization (Fig. 3). Here the primary concern in the planning of the space should be the corporate culture of the entity; how the organization operates, its management structure, and means of organizing around a project.

A successful plan must embody the answers to the following questions about the organization. Is the organization relatively fixed or do its people tend to flow with projects? Is managerial structure flat or hierarchical? What statement is being made through planning about the relationship between management and staff? It is often possible for a design professional to recommend alternative structures to enhance the operation of a particular organization, but if a structure is not compatible with the organization, its implementation will either force a shift in the mode of operation, or the plan will fail.

Office plans may be designed around the concept of **open office** space or **private office** space. Open office plans are common for working level persons in large, open areas and offer flexibility. Private office space plans are limited primarily to executive offices. In most cases, plans will be a mixture of a large open office area and a few private offices. Open office plans use systems furniture to define workstation and other spaces. Private offices are defined by fixed walls. Arriving at the appropriate solution requires an examination of the operation's organization and its culture.

Culture within the work place is not that much different from what we understand as culture on a geographic basis. Different work environments communicate, cooperate, and are managed in different ways. Corporate environments are microcosms of larger geopolitical cultures.

The culture of an organization is characterized by its work processes, methods of communication, and organizational structure; and is expressed through the design of its environment. The organization of work areas has much to do with the operation of the various functions and the interrelation of the parts. Work environments may be classified into the following groups:

- **Individual** space is provided for individual workstations and generally configured as office space. It may be either private or open. Individual workstations must consider surface work area, storage, security, communication, equipment, and privacy requirements that support individual work independent of other group activity.

- **Team space** may be defined as a collection of individual workstations and an area for common activity. A team room may also be created as a special use space to accommodate work on a common project as well as storage of project materials. Formal team rooms are generally not provided in government offices.

- **Informal group space** is a common support space which supports informal interaction among persons from multiple organizational units. These are areas where people have chance encounters and can include the coffee pot, reception areas, copier areas, and other possibilities.

- **Formal group space** means special purpose space dedicated for conference rooms or other places where people will assemble.

Alternative Officing refers to alternatives to dedicated office work space allocated on an individual basis, as opposed to traditional officing which involves a single location commuted to from the home and worked at on a regular basis.

Most offices will have a mixture of the environments listed above. Ownership or territoriality is a primary feature of any office plan. Traditional officing assumes that each individual will have a unique work space to which he or she is assigned on a permanent basis. **Alternative officing** acknowledges that workspace requirements are not static, and allows for a more dynamic allocation of resources based upon immediate needs. In alternative officing programs, a set of typical work spaces are developed which are then assigned on a needs basis.

Hybrid environments seek to optimize a mixture of work arrangements and ownership, in which each of these factors is satisfied separately. Component parts of workspaces which are necessary, but which do not need to be dedicated—such as conferencing areas in private offices—may be separated from the core function and shared among a group of individuals, thereby lowering the aggregate area requirements of the group. Many alternative officing solutions are centered around specialized furniture products intended to facilitate some particular aspect of work, others take advantage of changing work philosophies and technologies such as home officing or telecommuting.

Hoteling is an alternative officing solution which provides workspace for individuals who are not always in the office, but need to be accommodated when they are. Worker-to-workspace ratios in excess of one-to-one

are established which recognize the actual vacancy ratio within the organization, and typical workstations are established which may be used by any individual on an on-call basis. Other officing solutions recognize the need for both private work areas and team areas, but provide them as individual entities: offices do not have conference areas within them, but are drawn down to the minimum size necessary for the individual; shared conference areas are scattered throughout the plan.

The person planning the work environment should be well-versed in current planning philosophies and options. Most plans utilize a mixture of the four space types described above. Design solutions evolve as variations on basic concepts are refined for specific uses. By application of the general concepts to specific functional, organizational, and cultural requirements; a satisfactory solution can be identified.

Layout

In planning the individual organization the detailed information gathered during the initial programming process is employed. The entire process of developing bubble diagrams and then blocking diagrams is replayed at a more detailed level than before. Detailed workstation types and workstation clusters are developed and arranged to test their fit within the blocking diagram. Circulation and building modules (window mullions, lighting and power grids, and structural bay widths) must be strictly observed at this time.

Typically, a generic workstation unit or office is developed and tested against the user's stated program of requirements. Layout of the individual work areas begins with a detailed assessment of the individual work surface and storage requirements. As the floor area is largely determined by the target average area per individual, much of the variation in individual workstation requirements will be made up in the outfitting of the workstation proper. Generic group spaces which reflect the operations of the specific functional area should also be developed. These are then used to perform an initial layout of detailed spaces.

A series of uniform footprint workstations should be developed which satisfy the needs of the majority of the individuals. These may need to be created for a new organization or an organization which is moving into a new type of environment, or they may be refined from existing, when the unit is an established one simply undergoing a re-organization or move. Individualization of the workstations can be done on a case-by-case basis. By establishing pattern workstations, the planning of the organization's area is simplified, and future re-organization of individual positions is eased. With standardized workstations, people can move without having to move furniture. The cost and time involved in reconfiguring fixed walls and systems furniture make the use of workstations, typical in size and components, the most efficient way to manage the movement and changing needs of workers.

Circulation is as critical to the success of a floor plan as the layout of the individual and group workstations. Circulation must be clearly planned from point of access to end point so that residents or guests will be able to discern their paths easily. A hierarchy of widths aids in determining volume of traffic flow, and routes should be direct and visibly identifiable from any point. Egress distances and accessibility by the physically handicapped must be considered when laying out circulation paths. Within a given administrative unit, circulation is not merely definition of a boundary between organizational clusters, it must be fully functional and reflect the interrelation of the units.

Design Coordination

The direction for development of a space should be set and approved prior to the final planning and layout of the individual workstations. The development of a space is paralleled by development of its color scheme and interior finishes. In a new facility, fewer parameters influence the direction of the design. Once the initial direction is set, the designer selects items which fulfill the design intent. In existing facilities, additional factors—such as existing furniture which must be reused, and surrounding areas which must be integrated— will constrain the design direction. In either

case, materials and finishes should be chosen which harmonize with one another, and which do not date the project.

Typically, individual users understand only their own environment and may not realize the impact their portion of the project has on the overall concept. The designer must maintain a global view, within the context of the project, and further within the organization as a whole. Projects afford the designer the opportunity to express a current design interest or the personality of a specific client/user. The design intent, however, is to provide a solution which satisfies the needs of the user, provides an appropriate aesthetic expression, and will be maintainable over a period of time. The solution must also integrate well into the greater fabric of the organizational environment.

Documentation

Proper documentation of furniture-related interior design is more detailed than that required for building-related interior design work. Building-related interior design is typically fully-integrated within the architectural portion of the construction documents. The information required to communicate the intent of the design becomes a part of the architectural drawings, schedules and specifications. The interior designer is primarily responsible for ensuring that the design intent is properly conveyed.

Furniture-related interior design documentation may be either a stand-alone document developed after the building components are in place as is often the case for a simple remodel; or it may be a part of the overall set of construction and bid documents for a new construction project or extensive remodel.

Systems furniture and equipment must be located just as accurately as any other element of the project, and except for large homogeneous organizations, more detail is required per unit of area for systems furniture layout than for typical architectural construction. Documentation procedures vary, but plans should always be broken down into several related documents which separately convey the general location of individual workstations, then into successively smaller details

ranging from structure of the work space, to components of the work space, to accessories, to data, power and communications. Where repetition is significant, notes on the drawings may be used to take advantage of duplicate elements. The documentation must be thoroughly checked for accuracy and completeness, particularly with regard to rotated and mirrored versions of prototypical units.

Implementation and Move-in

While the user has the primary responsibility for implementation and move-in, the designer's responsibility is to advise on reuse of existing furniture, provide technical expertise in the review of furniture solicitations, and participate in the presentation of the plan to the organization. Even after the design is complete and documented, significant work and coordination must be done to complete the process and make the move successful.

The designer's role in this process is one of quality assurance, reviewing the product and seeing that it satisfies the intent. During implementation and move in, this will involve acting directly with the contractor, suppliers, installers, and the user; although perhaps the majority of contact will be with the contracting office, for furniture procurement.

Interaction with the contractor on building-related interior design involves providing clarification of intent prior to action and interpretation of results relative to design intent. Complete and thorough documentation is critical, but so is a watchful eye on the part of the designer.

Furniture-related interior design services typically involve placing all relevant procurement information on procurement forms, tracking, inspection, assembly, and placement, and tends to be a more involved process. The user may require considerable assistance to complete these operations. The designer needs to be certain that the user understands the key tasks involved:

- verifying funding,
- scheduling,
- placing orders,

- tracking shipments,
- accepting/inspecting deliveries and filing claims,
- warehousing,
- installation and coordination of furniture items,
- installation and coordination of electrical and data systems,
- warranties,
- moving existing property to new facilities, and
- excessing redundant property.

Follow-through is essential. Many items will need to be verified repeatedly in order to ensure that the provider meets the needs of the user, particularly with regard to schedule. During the final installation and move-in, the number of things happening at once can be overwhelming for the user. An implementation plan is essential to keep the process on schedule. Assigning the proper person to be in charge of the move is also a critical factor the success of the project.

Even after installation and move-in, issues may require the attention of the interior designer. Maintenance is an issue which dramatically impacts upon the appearance of a facility. An interior designer can assist by recommending the establishment of an operations policy to guide in the maintenance of facility appearance. The designer has little say, however, as to whether the policy is implemented and, if so, how successfully. Such a policy must have strong user/command support to assure successful implementation.

A post-occupancy evaluation allows both the user and the designer to learn from their experiences. The evaluation also affords the opportunity to see where modifications to the facility would assure better solutions in future work. These opportunities provide designers with some of the most potent feedback on their efforts and help both designer and user grow in their understanding of what is needed to create a truly excellent interior.